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ON A RARE XANTHID CRAB FROM WESTERN AUSTRALIA

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In July 1953 Mr. L. Glauert of the Western Australian Museum brought to the British Museum for determination a dry and rather broken specimen of a Xanthid Crab, that had been captured off Lancelin Island between 30 and 40 fathoms in March 1953. The specimen proved to be a large senile male of a species hitherto known as *Acanthodes armatus* de Haan that was long thought to be restricted to Japanese waters until specimens were obtained in the Great Australian Bight, off Eucla, by the *Endeavour*, 1909-14 (Rathbun, 1923, p. 128).

The monotypic genus *Acanthodes* was established by de Haan in 1833 (diagnosis on p. 20 and Pl. iv) although the description of the species *A. armatus* did not appear until 1835. However, it appears to be preoccupied by *Acanthodes* Agassiz 1833, an important genus of fossil fishes, although this has been overlooked by most carcinologists; Gistel (1848, p. viii) proposed that it should be replaced by *Hypothalassia*. Hilgendorf (1897), who was unaware of Gistel's name, proposed that *Acanthocarcinus* should be used — a name that has been overlooked till now and therefore does not appear in Neave's *Nomenclator Zoologicus* (1939-50).

This species, which must now be referred to as *Hypothalassia armata* (de Haan), appears to be rare for during the past 148 years fewer than 20 specimens have been recorded (the exact number cannot be given as some authors do not say how many they had). No complete description has been published but this was probably thought unnecessary in view of the excellence of the figures in several papers, and the ease with which the species can be recognised.

Genus *HYPOTHALASSIA* Gistel, 1848

Acanthodes de HAAN, 1833-35, p. 20 and 52 (nec *Acanthodes* Agassiz).

Acanthorcarcinus HILGENDORF in WELTNER, 1897, p. 280.

Fig. 1 Photograph of male from off Lancelin Island, in dorsal aspect, x approx. 2/5.

Hypothalassia armata (de Haan)

Cancer (Acanthodes) armatus de HAAN, 1833-35, pp. 20 and 52, pl. iv. 1 ♀

Acanthodes armatus, DOFLEIN, 1902, p. 661, pl. ii. 1 large ♂.

" " , PARISI, 1916, p. 187, 1 large ♂.

" " , BALSS, 1922, p. 116. 2 ♀♀.

" " , RATHBUN, 1923, p. 128, pl. xxxi and xxxii, fig. 1. 2 ♂♂ and 1 ♀, all young.

" " , URITA, 1926, p. 16. At least 3 specimens.

" " , SAKAI, 1934, p. 306. Probably no new record, but the 3 mentioned by Urita.

" " , SAKAI, 1939, pp. 516 and 719, pl. lxiii (coloured). 2 ♀♀.

" " , WELTNER, 1897, p. 243 — as host of epizooic *Poecilasma kaempferi* Darwin. At least 1 specimen.

OCCURRENCE. Off Lancelin Island, Western Australia, 30 to 40 fathoms. 1 large ♂. Other specimens in the Western Australian Museum are: 1 ♂ No. 8890, trawled in 24 to 40 fathoms off Rottnest, 1914, and 1 ♀ No. 47.1950, trawled in the Western Bight.

RECORDED DISTRIBUTION. Japan: Sagami Bay, Simoda, Kagosima Bay, Saisyu-to. Australia: Off Euela, Great Australian Bight.

DESCRIPTION. The *carapace* is hexagonal in outline, although the front and anterolateral borders together form an arc of a circle, moderately convex from back to front and almost flat transversely. The front is approximately one-fourth of the carapace width (excluding the spines); a U-shaped sinus separates the two lobes each of which is armed with 3 spines, one near the small supraorbital spine and two near the sinus; behind these, each frontal lobe has 2 or 3 short spines. The orbit is equal in width to the frontal lobe and is as deep as wide; the upper margin bears 4 small spines, including the supraorbital spine and the outer orbital or first anterolateral spine, and shows traces of two suture lines; the lower margin has 4 spinules in addition to the infraorbital spine. The antenna stands in the wide orbital hiatus but the main segment of the pedunele (2 + 3) does not reach the front. The anterolateral margin, behind the orbital spine, bears 4 principal spines the first of which is the smallest, and a subsidiary spine is present immediately behind each of the other spines. This particular specimen is not symmetrical as regards the two sides of the body; on the left side the first anterolateral spine is obsolete (replaced by a few spinules), the second is small and conical, the third is bifid, with a subsidiary spine behind it; only the last spine and the subsidiary one immediately behind it are as on the right side. As the specimen is senile, the spines on front and anterolateral margins are relatively much smaller and less curved than in de Haan's holotype (carapace 84 x 98 mm. or, if the spines are included in the width, 110 mm.) and the spines on the epibranchial, hepatic and gastric regions are much

redueed or obsolete. The posterolateral margins, whieh are equal to the posterior, and longer than the anterolateral, border are slightly eonvergent and straight. Near the posterior margin and subparallel to it is a row of spinules, and some spinules are present on the branchial region.

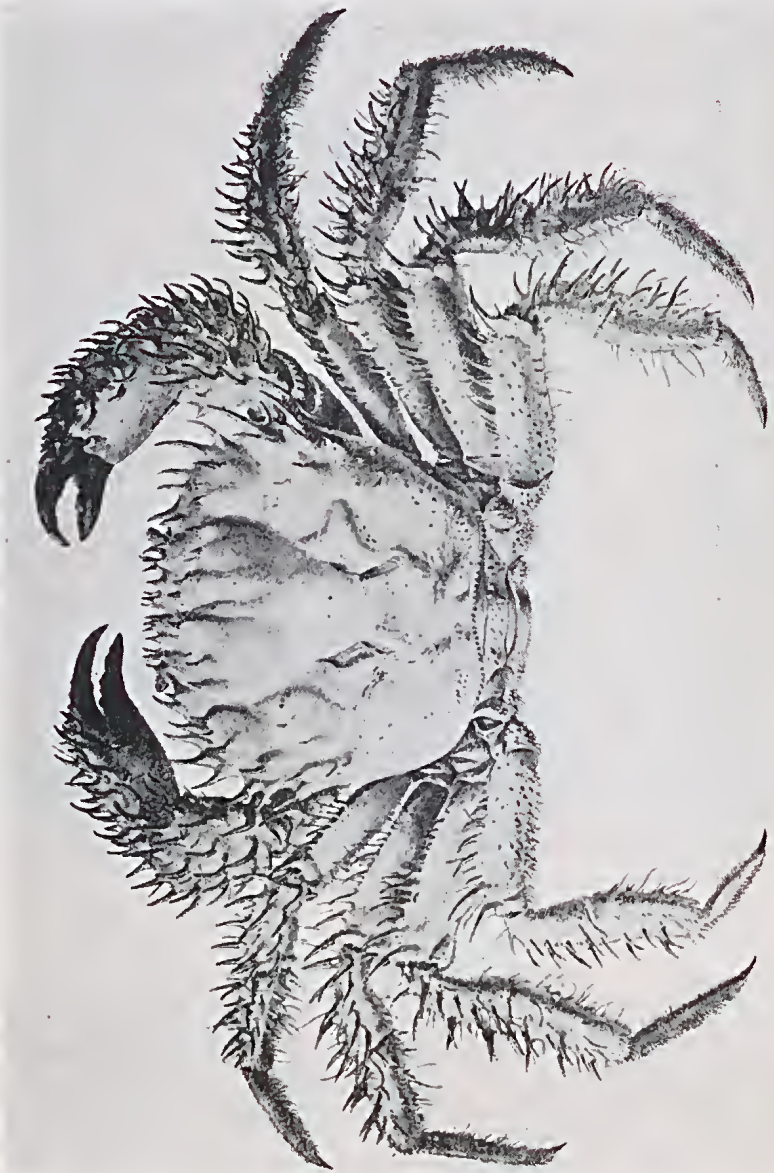

Fig. 2, Photograph of de Haan's figure of the female holotype (redueed).

The specimen is too damaged to show the details of the thoracic sternum. The *abdomen,* which is detached, is too curved to permit of a drawing being made. It differs from that of the young male figured by Rathbun (1923, p. 128, text-fig. 3) in being relatively wider; all seven somites are free (as in the young) but the terminal one is more definitely triangular (length approx. two-thirds the basal width), the sixth somite is nearly twice as wide as high; there are a number of sharp granulations on each of the first two, and traces of granulations on the pleurites of the third, somites.

The *chelipeds* are very unequal and much more massive than in the female or in the young. While the merus in each retains the series of graded curved spines on its upper margin, the long curved spines on the carpus and the palm of the chela are very much more reduced in the case of the smaller, or left, cheliped and entirely wanting in the large one (only the inner spine of the carpus being indicated by a blunt protuberance). The enormous enlargement of the chelipeds and the great reduction in the spiny armour of the crab is a feature of the senile male.

The *walking legs* are very similar to those of the female holotype, although the curved spines are relatively shorter. The merus of pereiopod II is three times as long as wide; its dorsal margin bears a graded series of 13 spinules and curved spines, the ventral surface has a series of 8 short straight spines along the posterior margin and an interrupted series of spinules along the anterior one. The carpus has three longitudinal series of spines on the upper surface while the propodus has spines or spinules on all surfaces. The long dactylus is cylindrical and, apart from the dark terminal claw, is heavily clothed with short setae. The lengths of the principal segments are given below. Pereiopod V is similar but rather shorter.

Doflein (1902) referred the genus to the subfamily Menippinae of Ortmann and the male copulatory *pleopods* certainly confirm this for pleopod 2 is longer than pleopod 1 and has a darker lash-like terminal portion.

MEASUREMENTS in mm.:

Carapace—length x breadth		108 x 125 (131 with spines)
Smaller cheliped:	l. x b. of merus	45 x 39
	l. of carpus	48
	l. x b. of palm	47 x 40
Larger cheliped:	l. of carpus	57
	l. of chela	140
	l. x b. of palm	70 x 64
Pereiopod II:	l. x b. of merus	62 x 20.5
	l. of carpus	41
	l. of propodus	31
	l. of dactylus	54

REMARKS. This specimen is very similar to, and almost as large as, the old male figured by Doflein (1902, pl. ii); the chelipeds, however, are even smoother with no trace of spinules on the carpus of the larger one. The number and arrangement of the anterolateral spines also differ somewhat, but a comparison

of all the illustrations shows that there is some variation in this respect.

Although so few specimens are known, they vary in size from 19 to 150 mm. (carapace width). In the smallest individual there are long hairs on the carapace and pereiopods and Rathbun describes it as *Pilumnus*-like. As the animal increases in size the hairs become fewer and soon disappear from the body and the chelipeds, though some persist on the walking legs. With age too the spines become relatively shorter, notably on the front half of the carapace. In the young the chelipeds are only slightly unequal, but with age the difference between them becomes more apparent. It is only in the very old male that the chelipeds undergo allometric growth, becoming much enlarged and very unequal. Sakai (1939, pl. lxiii) figures a female of almost the same size as the specimen I have described (*c.l.* x *c.b.* = 100 x 124

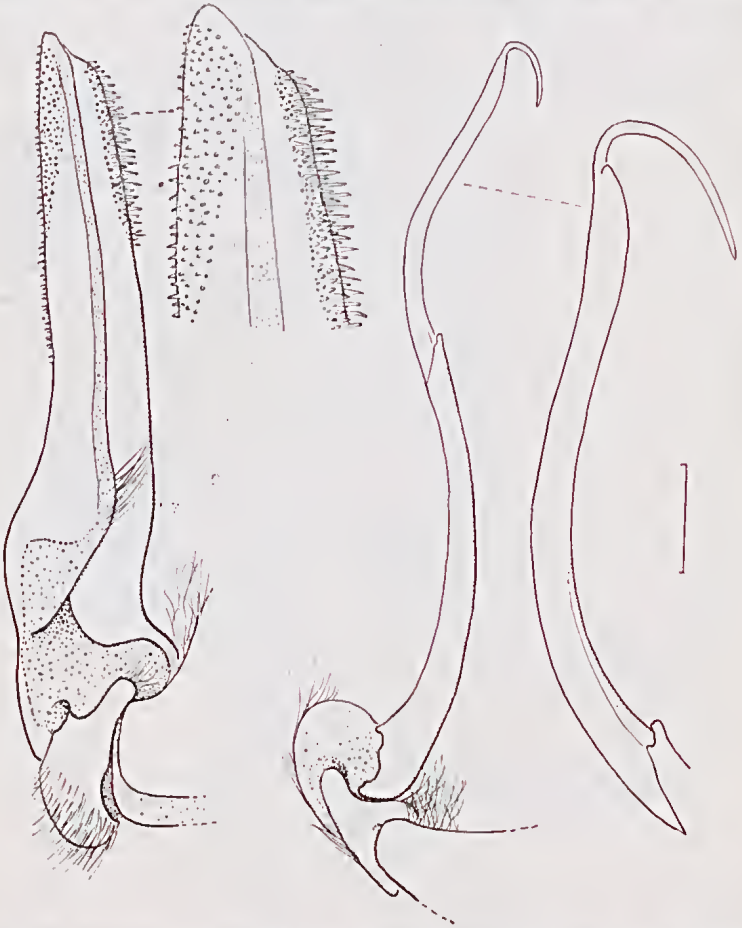

Fig. 3. Pleopods 1 and 2 of male specimen from off Lancelin Island, with distal portion of each more highly magnified. The scale on right = 5 mm. and indicates the lower magnification.

mm.), in which the chelipeds are relatively much smaller and moderately spiny. The length of the larger chela in this female is not quite two-thirds of, whereas in the male it exceeds, the maximum width of the carapace (see measurements given above).

A number of tiny Cirripedes belonging to a species of *Poecilasma* were adhering to the specimen. Weltner (1897, p. 243) has recorded *Poecilasma kaempferi* Darwin from this host.

HABITAT. According to Sakai (1939, p. 516) this species is usually found in rocky places in 50 to 100 metres — i.e. down to 55 fathoms. Rathbun (1923, p. 128), however, gives the depth at which the immature specimens were captured as 80 to 90 fathoms.

ACKNOWLEDGMENTS. The Trustees of the British Museum are indebted to Mr. L. Glauert of the Western Australian Museum for the gift of this large specimen; hitherto the genus *Hypothalassia* was not represented in the B.M. Collection. I am also grateful to Dr. L. B. Holthuis of the Leiden Museum for calling my attention to the obscure reference to Hilgendorf's generic name *Acanthocarcinus*.

ADDITIONAL NOTE. After the above description had been sent to Australia my assistant, Mr. R. W. Ingle, successfully repaired the specimen which is complete except for some distal segments of the last two walking legs on the right side. The accompanying photograph shows the almost smooth, very unequal, pineers characteristic of the senile male (Fig. 1).

In addition, a reduced copy of de Haan's original figure of the female holotype (*c.l.* = 84 mm.; *c.w.* between bases of the posterior spines = 98 mm.) is included to show the very spiny, slightly unequal, pineers which are more typical of the species (Fig. 2).

The male pleopods were removed and relaxed in a 0.1% solution of tribasic sodium phosphate (Na_3PO_4) in distilled water to which a little glycerine was added, and I am now able to include camera lucida sketches of these (Fig. 3). Pleopod 1 is stout, almost straight, beset with spinules and spines near the apex, as illustrated. Pleopod 2 is very long and slender and, when the two pleopods are interlocked, its apex would project a considerable distance beyond that of pleopod 1. The proximal part of the shaft of pleopod 2 is whitish whereas the distal lash is light brown in colour and transformed apically into a slender recurved sickle or hook.

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JOHN GILBERT'S NOTEBOOK ON MARSUPIALS

BY MAJOR H. M. WHITTELL, O.B.E., BRIDGETOWN*

In the library of the Queensland Museum, Brisbane, there is a copy of Volume XXIV of Jardine's *Naturalist's Library* (Mammalia. Marsupialia, or Pouched Animals, by G. R. Waterhouse, August 1841), which, though in the original covers, has had the pages referring to Australian marsupials mounted and interleaved. It commences with page 117 of Waterhouse's text, continues to page 165, the pages covering the kangaroos are missing, and the book commences again at page 249 and continues to the end (page 323). Pages 262 and 263, concerning the Spotted Phalanger, are not included. This little book was Gilbert's notebook on marsupials and he has entered in his own handwriting further notes on the species he collected. The observations end with a brief item on the one Monotreme in our fauna, the Echidna.

An announcement of the existence of this notebook together with a preliminary description have already been made (Whittell, 1951). In that paper it is stated that the missing pages 262 and 263 concern an American marsupial. This is not the case as they refer to the Spotted Phalanger (Cuscus) *(Phalanger maculatus* (Geoffroy)) of the New Guinea region which, subsequent to Gilbert's death, was discovered on Cape York Peninsula by John Macgillivray. Of considerable interest is the fact that the notebook contains two pen-and-ink sketches of marsupials "which are possibly the work of Gilbert. If that be so, it is the first intimation we have that Gilbert was able to produce artistic and accurate drawings." As recorded by Whittell (1951) there was found with Gilbert's notebook a ms. index to a notebook on kangaroos but unfortunately the volume itself was not forthcoming.

*After Major Whittell's death the manuscript of this article was completed for publication by Mr. J. H. Calaby, Wildlife Survey Section, C.S.I.R.O., Perth.